CHAPTER 5

Defining MCU Services and Using the MCU

This chapter provides guidelines for defining MCU services and describes how you initiate and participate in a conference. The topics include:

- Guidelines for Defining MCU Services
- Using the MCU
- Creating a Cascaded Conference

Note After an administrator has configured the MCU, the system is ready for operation. There is no need to reconfigure the unit for each conference.

Guidelines for Defining MCU Services

The services you define for the MCU determine the nature of the conferences you will be able to implement. The difference between these conferences is the allocated bandwidth, the frame rate and the maximum number of participants allowed. This section explores the main issues you should consider when defining services. These include:

- Available bandwidth for videoconferencing
- Capacity of videoconferencing programs
- Gateway connections
- Gateway audio transcoding capabilities
- Number of participants
- Service prefixes

- Audio only conferences
- Suggested services

Available Bandwidth for Videoconferencing

The bandwidth available for videoconferencing depends on the location of the participants.

When all the conference participants are on the LAN, the available bandwidth is determined by the capacity of the video conferencing programs in use and the system administrator. The system administrator can limit the available bandwidth through the gatekeeper settings.

When at least one of the conference participants is not on the LAN and is connected to the conference via a gateway, the available bandwidth is determined by the gateway connection, the gateway audio transcoding capabilities and by the capacity of the video conferencing programs in use.

Capacity of Videoconferencing Programs

Most videoconferencing terminals support varying bandwidths (video bit rates) and frame rates. To prevent videoconferencing terminals that support lower video bit and frame rates from receiving unsuitable quality video, you should set the service parameters according to the lowest video bit and frame rates supported. You can also set a dynamic bandwidth service, in which the MCU adapts the bandwidth to the videoconferencing terminal with the lowest bandwidth capacity.

Gateway Connections

When at least one of the conference participants is connected to the conference via a gateway, the gateway connection determines the available bandwidth. This connection can vary from a standard ISDN BRI 128 kbps connection to a 1.54 Mbps PRI connection. Even when connected to a PRI ISDN service, most gateways today support a maximum bandwidth of 384 kbps per connection.

Gateway Audio Transcoding Capabilities

Gateways usually have audio transcoders that compress the audio stream to improve the video quality of a videoconference call. Gateway audio transcoding capabilities vary from gateway to gateway.

When audio transcoding does not take place, the WAN terminal and the MCU exchange G.711 audio. As a result the audio stream takes up to 56 kbps of the available bandwidth for the conference. Because most WAN terminals support G.728 audio transcoding, which compresses the audio stream to 16 kbps, we suggest you install a G.728/G.711 audio transcoder in the gateway. This increases the bandwidth available for video streams, improving the video quality of a WAN and LAN conference.

Table 5-1 summarizes the effect of a transcoder on the bandwidth available for video streams in a standard 128 kbps BRI ISDN connection:

Table 5-1 Transcoder Effects on Bandwidth

Transcoding Method	Total Bandwidth kbps	Audio Bandwidth kbps	Video Bandwidth kbps
G.711	128	64	60[1]
G.728 WAN ⇔ G.711 LAN	128	16	110[1]

1 The remaining 3 to 4 kbps are used for control messages.

Number of Participants

The maximum number of participants per conference depends on the bandwidth you set for this conference. When you set the number of participants, the MCU reserves bandwidth for the total number of participants in this conference even if not all the participants join. To prevent this waste of bandwidth and MCU resources, we recommend you set an average number of participants, for example five.

Service Prefixes

Service prefixes can be up to 31 characters long, including the following valid characters: 0 through 9 and ‘#’, ‘*’, ‘,’. It is advisable to set prefixes that do not begin with the same sub-strings as your terminal phone numbers, or else include one of ‘#’, ‘*’, ‘,’.

Note The prefixes you set at the Service Definition Table of the MCU should match those set at the Service Definition Table of the gatekeeper.

Audio Conferences

The MCU supports audio only conferences. You can define an audio only conference service by setting the video bit rate parameter to 0.

Suggested Services

The default hardcoded services provide some elementary conference types that take into account the considerations mentioned in this chapter. Table 5-2 summarizes these services.

Table 5-2 Default Hardcoded Services

Description	Prefix	Frame Rate kbps	Video Bandwidth kbps	Participants	Picture Format
Low Quality	60	7.5	110	5	CIF
Medium Quality	61	7.5	320	5	CIF
High Quality	62	30	320	5	CIF
Super Quality	63	30	700	3	CIF
Full Room	64	30	110	14	CIF
Dynamic Rate	65	7.5	—	5	CIF

We recommend you use these default services. If LAN endpoint phone numbers begin with the same numeric string as these service prefixes, you can modify these services at the gatekeeper and MCU Services Definition Table.

Using the MCU

This section describes how to organize a conference, become a conference participant, and monitor a conference.

Conference Organizer's Actions Before the Conference

Perform the following step to organize a conference:

Step 1 Choose conference type (service).

Step 2 Construct a unique conference password as follows: *Prefix a unique ID.* For example, 605793, where 60 is the conference type prefix, and 5793 is the unique ID.

Step 3 Notify all conference participants of the conference password and when the conference will be held. If some users join the conference via gateways, they also need to know a gateway ISDN phone number.

Conference Participant's Instructions

To join the conference, perform the following steps:

Step 1 On the LAN, dial the conference password. VTA users dial in the same way as LAN participants.

Step 2 On ISDN, dial a gateway ISDN phone number. Follow IVR instructions and enter the conference password.

Sometimes, it is useful to invite someone into a conference. Several reasons for this include:

- A person was not notified about the conference in advance.
- A person is unable to dial into the conference. For example, a participant joining the conference via a gateway has a terminal that does not support DTMF and is therefore unable to use the IVR.
- You want to invite another MCU to join the conference and create a cascaded conference.

You can invite a terminal into the conference when dialing into the conference or from the monitoring screens. To invite someone from the monitoring screens see "Inviting a Participant from the Monitoring Screens" in this chapter.

To invite a terminal when dialing into a conference, dial the conference password followed by "**" and then the phone number of the person you want to invite.

Note Zydacron 350 endpoints interpret "**" as a **dial now** command. To invite a terminal from a Zydacron 350 endpoint, type the conference password directly followed by the terminal phone number, add ** in the appropriate place and press the **Dial** button.

Example 5-1 Initiating a Conference

This example shows the steps you can use to initiate a conference using the MCU. In all examples 601234 is the conference password.

Step 1 To initiate a conference and invite a terminal with phone number 9999 dial **601234**9999**

Step 2 Terminal 1111 and 2222 are in a conference. You also want to invite terminal 9999. 1111 should disconnect and re-connect: 601234**9999. Now 1111, 2222, and 9999 are in the conference together.

Step 3 To invite more that one terminal into the conference, dial
6012342222**9999**8888**
The limit of terminals you can invite in one dialing occurrence depends on the total number of parties allowed for this conference, by the maximum number of characters allowed in the dialing field of the videoconferencing program, or 500 characters.

Step 4 To invite someone over a gateway which can be reached from the LAN by dialing 80, dial
60123480123456**
Where 80 is the prefix for outgoing calls from the gateway, and 123456 is the ISDN phone number of the invited person.

Creating a Cascaded Conference

You can cascade two or more conferences managed by separate MCUs to create one unified conference with multiple participants.

The following conditions must apply for a cascaded conference to take place:

- The individual conferences must have the same or similar video bit rates and frame rates.
- The MCUs participating in the cascaded conference must register with the same gatekeeper or neighbor gatekeepers.
- The prefixes of the conferences provided by the MCUs must be unique.

You create a cascaded conference by inviting an MCU to join a conference managed by another MCU. When a terminal joins the conference managed by the invited MCU, it actually joins the cascaded conference and can exchange audio and video with all other participants in the cascaded conference. The invited conferences are not autonomous, unless you break up the cascaded conference.

There are two ways in which you can invite an MCU to join a conference:

- A terminal can invite an MCU when dialing in to the conference.
- Through a web browser using the monitoring screens.

For information on inviting an MCU to join a conference through the conference monitoring screens, see Inviting a Participant from the Monitoring Screens, To invite an MCU to join a cascaded conference, dial the appropriate MCU prefix.

To invite an MCU to join a conference, dial the conference password, the invite sign **, and the conference password of an invited MCU from the terminal.

Example 5-2 Inviting an MCU to Join a Conference

To initiate a conference and invite an MCU with a conference whose password is 741, dial:
641741**
Where 641 is the conference password for the first MCU, ** is the invite sign, and 741 is the conference password for the invited MCU.

Terminals dialing into a cascaded conference can invite terminals to join the cascaded conference via other MCUs.

Example 5-3 Initiating a Conference

To initiate a conference, invite an MCU with a conference whose password is 741, and invite a terminal to join the 741 conference dial
641741**5578**.
Where 641 is the conference password for the first MCU, ** is the invite sign, 741 is the conference password for the invited MCU, and 5578 is the invited terminal phone number. Terminal 5578 joins the 641 conference.

The inviting terminal and terminal 5578 are part of a cascaded conference.

Note Cascaded conferences should be planned carefully. MCUs must not be mutually invited; this will cause a loop back between the two MCUs.

When more than two MCUs are participating in a cascaded conference, it is recommended all MCUs join the same conference in a star like topology. Otherwise, terminals connected to the cascaded conference via another conference cause a delay in the reception and transmission of the audio and video streams.

Monitoring the Conference

During an MCU conference you can do the following monitoring and managing functions:

- View information about conference participants.
- Invite new participants to join the conference.
- Open a Data Collaboration (T.120) session with other participants.
- Obtain Chair Control over the conference which exclusively allows you to:
  - Disconnect other participants from the conference.
  - Lock the conference video broadcast on one participant so that all participants see only the locked participant.

Prerequisites

The following requirements are needed to use the Monitoring facility of the MCU.

- An Internet browser: Netscape Navigator version 3.0 or later, or Microsoft Internet Explorer version 3.0 or later.
- If you want to open a data collaboration session:
- Data Collaboration software that is compliant with Microsoft NetMeeting such as NetMeeting, Intel Business Video Conferencing System, VCON Meeting Point or others.

Note The Data Collaboration feature is only supported under Microsoft Internet Explorer.

Starting the Monitor

Step 1 Launch your browser.

Step 2 Type in the URL of the MCU. You can use an IP address or a domain name, if it has been registered as a DNS (check with your system administrator).

The Conference Monitoring opening web page appears in your browser.

Step 3 Type the conference password as set up by the conference organizer.

Step 4 Click **OK** to continue. The Participants Details page appears.

Monitoring the Conference

The Participants Details page is divided into two frames: a left frame and a main frame. The left frame includes the function buttons and the main frame displays a list of conference participants, their phone numbers, terminal types and IP addresses, as appear in the MCU.

Function Buttons

The function buttons on the left frame include general functions performed on the conference and functions performed on participants. The general functions are always displayed while the participant specific functions are only displayed when a participant is selected.

Data Share—Allows you to open a data collaboration session with the selected participant. It only appears when you select a participant that supports data collaboration.

Invite—Allows you to invite one or more participant into the conference.

Refresh—Updates the main screen to reflect any changes that take place in the conference.

Chair Control—Grants chair control; the chairperson has additional functions not available to other participants or monitoring parties. These include the ability to disconnect participants and lock the conference video broadcast on a particular participant. Once Chair Control is granted, no one else can obtain it until it is released.

Participant Details

Each detail line displays the following:

Selection Button—A selection button precedes each detail line. The selection button allows you to select a participant and access the functions you can perform on the participant.

Participant—This displays the participant's name. If the MCU cannot identify a participant's name, "Unknown" is displayed instead.

A ** next to participants indicates that they were invited to join the conference.

Phone Number—This displays the participant's phone number. If the MCU cannot identify a participant's phone number, "Unknown" is displayed instead. For participants dialing from the WAN through a gateway, the gateway phone number is displayed.

Type—This shows the type of conferencing software the participant is using.

IP—This is the IP address of the participant. If the participant is connected to the conference via a gateway, the gateway IP address appears instead.

Opening a Data Collaboration Session

Note You must use the Microsoft Internet Explorer browser if you want to open a data collaboration session.

If a participant's Terminal Type shows a terminal that you know is NetMeeting compliant you can open a data collaboration session with it. Depending on the participant's Terminal Type, NetMeeting may have to be activated before data collaboration can take place.

As new participants join the Data Collaboration session, participants who have already joined will be able to collaborate with them.

To open a Data Collaboration session, perform the following steps:

Step 1 Select the participant with whom you want to open a data collaboration session. The Data Share button appears in the left frame.

Step 2 Click **Data Share**. The NetMeeting board opens and you can communicate.

Step 3 Repeat steps 1 and 2 for all participants who have NetMeeting-compliant terminals, and who you want to include in the Data Collaboration session.

Inviting a Participant from the Monitoring Screens

The invite function allows you to invite new participants into the conference. You can also invite MCUs into the conference to create a cascaded conference. For more information, see "Creating a Cascaded Conference" in this chapter.

To invite a new participant from the monitoring and managing screen, perform the following steps:

Step 1 From the left frame click **Invite**. A text box for entering the phone number of the party you want to invite appears at the bottom of the left frame.

Step 2 In the Invite text box type the phone number of the party you want to invite. If the invited party is on the WAN, type the gateway prefix for outgoing calls followed by the invited party's ISDN number. If inviting more than one participant, dial the invite sign (**) between the terminal phone numbers. The invite text box is limited to a total of 200 characters.

Step 3 Click **Ok** to confirm. The invited party is added to the participants in main screen and (**) appears beside the participant's name. To view the change immediately, click **Refresh**.

To invite an MCU into a conference from the monitoring and managing screen (creating a cascaded conference), perform the following steps:

Step 1 From the left frame click **Invite**. The Invite text box appears at the bottom of the left frame.

Step 2 In the Invite text box type the password of the MCU conference you want to cascade. If the remote MCU connects via gateways, type the gateway prefix for outgoing calls, the ISDN number of the remote gateway and the conference password.

Step 3 Click **Ok** to confirm. The cascaded MCU is added to the participants in the conference.

Step 4 Click **Refresh**. The MCU appears in the main screen with the invite sign (**) next to it. Participants in the invited MCU conference are now part of the cascaded conference.

Note You can not invite a terminal into a conference managed by another MCU from this monitoring screen, even when the MCUs are cascaded.

Obtaining Chair Control

The Chair Control function lets you disconnect participants from the conference and lock the video broadcast on a particular participant. You do not have to be a conference participant to obtain Chair Control and you can function as an outside conference chairman. Chair Control is obtained on a first come, first served basis. Once Chair Control is granted, no one else can obtain it until it is released.

You monitor a cascaded conference through the individual monitoring screens of each independent conference. The functions provided by the monitoring screens do not operate on the cascaded conference but on each individual conference. It is advisable to have the same Chairman for all the individual conferences of a cascaded conference.

To obtain Chair Control, perform the following steps:

Step 1 From the left frame, click **Chair Control**. 'Chair control granted' appears in the status bar, if it has not already been granted to another participant. If you are participating in the conference from the PC on which you have accessed the monitoring screens, your detail line in the main frame appears in bold. The Chair Control button is replaced with a Chair Release button and the Cisco IP/VC logo on the left frame flashes occasionally.

Step 2 If you close your browser without releasing Chair Control, the MCU automatically releases it after a period of three minutes. Once released, Chair Control is once again available upon request.

Step 3 If someone tries to obtain Chair Control when it is already granted to someone else, a 'Chairman not granted' message is displayed in the status bar.

Chair Control Additional Function Buttons

The additional management functions available to the Chairman include:

Disconnect—Disconnects a selected participant from the conference.

Lock/Unlock—Allows you to lock the conference video broadcast on one participant so that all participants see this participant only.

You must select a participant to access these functions.

Disconnecting a Participant

The Disconnect feature is useful when for some reason you want to disconnect a participant from a conference.

For example, you may have invited someone to join your conference without knowing whether the person is actually present. If the invited person's terminal has been set to an auto respond mode it will connect to the conference even if nobody is present. When you discover that the terminal is unattended, you would probably want to disconnect the terminal from the conference. An idle terminal connection does not directly affect the conference, but disconnecting it saves on telephone/ISDN costs and frees a channel for another participant.

You can also use the Disconnect feature to break up a cascaded conference into the independent conferences from which it is formed. This is achieved by disconnecting the MCUs participating in the conference.

To disconnect a participant, perform the following steps:

Step 1 Select the participant you want to disconnect. Click **Disconnect**. A confirmation message appears at the bottom of the left frame.

Step 2 Click **Ok** to confirm. The selected participant is disconnected from the conference and the main frame appears updated.

Locking the Conference Video Broadcast on a Participant

The Lock function allows you to lock the conference video broadcast on a participant so that all other participants see the locked participant. The participant on whom the video broadcast is locked sees the last participant to speak. The Lock function is useful for distance learning when one of the conference participants is a teacher or tutor and will do most of the talking. Locking the conference video broadcast ensures that the students only see the teacher. The teacher, however, can see a student that asks a question.

To lock the conference on one participant, select the participant on which you want to lock the conference. Click **Lock/Unlock**. The selected participant's detail line appears in a different color.

To unlock the participant, select the locked participant and click **Lock/Unlock**.

Note If you try to lock the video broadcast on a participant that does not have a video camera or video capturing capabilities, locking does not take place and the following message is displayed in the status bar: `This participant does not send any video`.

To lock a cascaded conference on one participant, perform the following steps:

Step 1 From the conference monitoring screen, select the participant on which you want to lock the conference. Click **Lock/Unlock**. The selected participant's detail line appears in a different color.

Step 2 From the conference monitoring screens of the MCUs participating in the cascaded conference, select and lock the MCU that manages the conference of the locked participant. All the participants of the cascaded conference will see the locked participant.